DOI:
10.1016/j.eurpsy.2015.10.005

Document Version
Peer reviewed version

Title: Impact of the mass-media OBERTAMENT campaign on the levels of stigma among population in Spain

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Abstract

Reducing public stigma could improve patients' access to care, recovery and social integration. The aim of the study was to evaluate a mass media intervention which aimed to reduce the mental-health related stigma among the general population in Catalonia (Spain). We conducted a cross-sectional population-based survey of a representative sample of the Catalan non-institutionalized adult population (n=1,019). We assessed campaign awareness, attitudes to people with mental illness (CAMI) and intended behaviour (RIBS). To evaluate the association between campaign awareness and stigma, multivariable regression models were used. Over 20% of respondents recognized the campaign when prompted, and 11% when unprompted. Campaign aware individuals had better attitudes on the benevolence subscale of the CAMI than unaware individuals (p=0.009). No significant differences in authoritarianism and support for community mental health care attitudes subscales were observed. The campaign aware group had better intended behaviour than the unaware group ($p<0.01$). The OBERTAMENT anti-stigma campaign had a positive impact to improve the attitudes and intended behaviour towards people with mental illness of the Catalan population. The impact on stigma was limited to attitudes related to benevolence. A wider range of anti-stigma messages could produce a stronger impact on attitudes and intended behaviour.

Key words

Social Stigma; Social Discrimination, Mental Disorders; Mass Media

1. Introduction

Public stigma against people with mental illness is a cultural and social phenomenon that dramatically influences the lives of people with mental illness [1,2]. Several studies have shown that population levels of stigma are associated with self-stigma [3]; vulnerability to unemployment [4]; low levels of help-seeking behaviours [5,6]; and suicide [7] among individuals with mental illness. Stigma is the greatest barrier to social participation among those with mental disorders [1,8]. To fight against this, different countries have implemented population-based anti-stigma campaigns. These campaigns are based on the principles of social marketing and use multifaceted strategies [1,9], including promoting social contact and highlighting injustices (protest strategies); as well as educational interventions: targeted on specific populations (e.g. journalists and health professionals) and to the general population (using mass media to change public attitudes). Educational interventions are the most common strategies used to address public stigma [1,9]. This component aims to change inaccurate representations of mental disorders by providing factual information about mental illness [10]. This is often done with mass media (e.g. advertising in key places in a city, announces in the radio, TV, newspapers, Facebook, twitter, etc.), as mass media have the advantage to reach a broad number of people at a relatively low price.

Although there is growing data from campaigns such as "Time to Change", "See Me", "In One Voice" or "Open the Door" that demonstrate effectiveness in changing attitudes towards people with mental health problems [11–15], evidence of the effectiveness of mass media-based strategies is still scarce and most evaluations were targeted on students [16]. Furthermore, most of this literature on anti-stigma campaigns is coming from Anglo-Saxon countries [16]; and little is known about the effectiveness of these strategies in other countries, which have different cultural values and prevalence of mental disorders [17–19].

The aim of this study is to assess the impact of a mass media intervention (OBERTAMENT) on the mental-health related stigma (prejudice and discrimination) of the Catalan population in Spain.

2. Method

2.1. OBERTAMENT campaign

The OBERTAMENT campaign targets the general population in the Autonomous Community of Catalonia (Spain) (7.6 million persons) [20]. The first public awareness campaign was launched during September/October 2012. The campaign was aimed at the general public and the main target demographic was individuals aged between 15 and 45 years. The prevalence of mental illness is higher in this age group and they are more likely to be exposed and receptive to the marketing campaign. The main objective of the campaign was both publicizing the problem of stigma and discrimination faced by people with mental illness and how they are socially affected by stigma and discrimination. Appendix A provides detailed information about the campaign.

2.2. Study design

We conducted a cross-sectional population-based survey (July-October 2013). The survey was part of the ongoing Catalan Health Survey (Alcañiz-Zanón*et al.* 2014) that has been conducted by the Department of Health of the Government of Catalonia since 1994 to assess the overall health status, life style and use of health services of the Catalan population and consists of a face-to-face interview that takes place at the home of individuals randomly selected. ESCA is an official survey that meets all the Spanish regulatory requirements including data confidentiality. All participants provided informed consent.

2.3. Participants

The ESCA survey consisted of a multistage probability sample representative of the non-institutionalized residents of Catalonia. There were no other exclusion criteria. The ESCA survey (2010-2014) is structured in eight biannual stages of approximately 2,400 interviews each [21]. To evaluate the impact of the OBERTAMENT campaign, we included survey respondents who were older than 14 years of age and who were interviewed between July and October 2013 (n=1,019). The sampling strategy was stratified (by gender, age and municipal

size). The basic territorial units were the health territorial governments. First, the municipal territories were classified under five categories according to their population size and randomly selected within the 37 health territorial governments. Territorial areas which were less densely populated were overrepresented. Second, individuals from the selected territories were stratified by sex and age (13 age groups were generated) and a random sample of the participants (each with 10 substitutes) were selected from each gender and age stratum. A probability weight based on the sampling strategy was calculated.

2.4. Measures

Data were collected on the following sociodemographic characteristics: gender, age, marital and working status, nationality and education. To evaluate familiarity with mental disorders, participants were asked if they had experienced a mental disorder (depression and/or anxiety or other) at some point in their life, if they had used psychotropic medications (sedatives or tranquilizers, antidepressants or sleep medicines) in the last two days and if they knew someone who had experienced a mental disorder (close relative, another relative, friend or others).

First, recollection of the campaign (i.e. spontaneous awareness) was assessed by asking the participants if they remembered any campaign related to mental health and what was the message. Second, recognition of the campaign (i.e. prompted awareness) was assessed by showing the participants a series of images of the campaign and asking if they recognised the campaign or not. If the participants remembered the images of the campaign they were asked where they had seen the ad. Recall of campaign messages was assessed by asking participants who recognised the campaign if they remembered any messages of the campaign.

Individuals who reported remembering the images of the campaign were categorised as "campaign aware" and those who did not remember the images of the campaign were categorised as "campaign unaware". The subsample of people that recalled the message content

of the campaign were categorised as “message aware” in comparison to those who could not recall any message (“message unaware”).

Mental-health related attitudes were assessed using the Community Attitudes Towards the Mentally Ill scale (CAMI) [22]. The original scale includes 40 items that are rated on a five-point Likert type scale from 1 (strongly agree) to 5 (strongly disagree) that are organized into four subscales (10 items each) that include authoritarianism, benevolence, social restrictiveness and community mental health ideology. The Spanish version of CAMI showed adequate reliability in a sample of adolescent students but it has not been validated in adults [23]. We used a short version of 26 items (CAMI-26) that has been used before to evaluate stigma campaigns and thus allows comparison with previous campaigns [12].Scores of negative items were reverse coded so that higher scores indicate more favourable attitudes.

Intended behaviour in relation to future contact with people with mental health problems was assessed using the intended behaviour subscale of the Reported and Intended Behaviour Scale (RIBS) [24]. The RIBS intended behaviour subscale considers future intention to live with, work with, live nearby and continue a relationship with someone with a mental health problem and are rated on a five-point likert scale from 1 (strongly disagree) to 5 (strongly agree) so that higher scores indicate more favourable intended behaviour.

Both scales were translated and back translated into Spanish and Catalan languages and adapted cross-culturally. We evaluated the psychometric properties of the Spanish version of the CAMI with a Principal Component Analysis that yielded 3 factors: “authoritarianism” (7 items) (α=0.54), “benevolence” (6 items) (α=0.63) and “support for community mental health care” (10 items) (α=0.72). More information on the method can be found in the Appendix B. The internal consistency of the RIBS was evaluated with Cronbach's α coefficients. The internal reliability of the overall scale was good (α=0.88).

2.5. Statistical analysis

Stata 13 was employed to conduct all analyses. Probability weights were used to weight the sample back to the population from which the sample was drawn and ensure accurate point estimates.

2.5.1. Construction of the propensity score

As this was an observational study, campaign exposure was not randomly assigned so that some participants' characteristics may be associated with both campaign exposure and outcome. That means that individuals who were campaign aware versus unaware may be different in ways that predispose them to have different attitudes and behaviours toward people with mental illness, leading to unbalanced comparison groups. To minimise bias, we constructed a propensity score for each individual using a logistic regression where the dependent variable was campaign awareness and the independent variables were the individual characteristics that we expected to be correlated with exposure and expected outcomes (gender; age; educational level; social class based on occupation; self-reported experience of mental disorders; use of psychotropic drugs; contact with people with mental illness; and nationality)[25,26]. The propensity score is the conditional probability of exposure to the program taking into account the observed variables and it is used in all regression models to approximate a quasi-randomized experiment [27].

Sociodemographic and clinical characteristics and contact with mental illness were compared between aware and unaware individuals using generalized linear models. To assess statistical equivalence between groups after adjustment by the propensity score, these group comparability models were fitted again adjusting by the propensity score.

2.5.2. Multiple imputation of missing data

The proportion of missing values in the items of the CAMI and RIBS ranged from 1.7% to 35.1% with 3 items with a proportion of missing values over 10% and 45.9% of participants with at least one missing variable. Under a missing at random assumption, we used multiple

imputation by chained equation to impute the missing values using the predictive mean matching method[28,29]. We included in the imputation model all available covariates as predictors in the regression model and created 200 imputed datasets. All analyses that included items or total scores of the CAMI and RIBS (variables with missing values in the original database) were conducted in each of the imputed databases. Rubin's rules were used to combine point and variance estimates from the multiply-imputed databases[28].

2.5.3. Association between campaign awareness and stigma related attitudes and intended behaviour

The proportion of people who recalled the campaign and/or the messages of the campaign (campaign and message aware group) was calculated. To evaluate the association between campaign awareness (independent variable) and stigma related attitudes and intended behaviour (dependent variables), multivariable linear models were fitted (with and without propensity score adjustment). A sensitivity analysis was made with those individuals who remembered specific messages of the campaign compared to those who did not (message awareness).

Effect sizes were calculated as the mean difference between groups divided by the standard deviation (Cohen's d) for the continuous variables. Odds ratios were converted to Cohen's d using the conversion equation suggested by Chinn et al. 2000 (d=ln(OR)/1.81)[30]. The magnitude of effect sizes was interpreted as small (d≤0.20), moderate (d=0.50) or large (d≥0.80) [31].

3. Results

3.1. Participant characteristics

Table 1 shows the sociodemographic characteristics of the 1,019 participants, stratified by campaign awareness. Non-Spanish nationals had a lower probability of being aware of the campaign. A higher proportion of campaign aware respondentsreported ever having a

depressive and/or anxiety disorder and being in contact with people with a mental disorder. After adjustment by the propensity score there was no statistically significant difference between exposed and unexposed groups.

Table 1

3.2. Penetration of the campaign

Almost 11% of the population spontaneously remembered a campaign related to mental health, but only 0.8% recalled that the campaign was related to stigma and discrimination (Table 2). After being prompted with images from the campaign, 20.4% (n=190) of the population recognized the OBERTAMENT campaign images (campaign aware group) and 7.3% (n=67) remembered some of the messages of the campaign. Television was the principal means of spreading the campaign (13.4% had seen it on TV) followed by the Internet (2.4%).

Table 2

3.3. Prevalence of attitude and intended behaviour by campaign awareness status

Attitudes toward people with mental illness were generally favourable in the population with over two thirds of the population agreeing to 14 of the 23 items of the CAMI (Table 3). The level of agreement was low in 3 of the 23 items of the CAMI ("There is something about people with mental illness that makes it easy to tell them from normal people"; "Mental hospitals are an outdated means of treating people with mental illness"; "Less emphasis should be placed on protecting the public from people with mental illness"). Over 66% of the population was willing to work with, live nearby to and continue a relationship with someone with mental illness. A lower proportion of the population was willing to live with someone with a mental illness (over 56%).

Overall, the level of agreement to CAMI and RIBS statements in the campaign aware and message aware group was similar to that of the campaign and message unaware group,

respectively (Table 3). For two CAMI items ("People with mental illness have for too long been the subject of ridicule"; "Increased spending on mental health services is a waste of money") and all four RIBS intended behaviour items, the level of agreement was higher in the campaign aware group compared to the unaware group. On the contrary, a higher proportion of campaign unaware individuals agreed with item 3 of the CAMI ("As soon as a person shows signs of mental disturbance, he should be hospitalized"). Message aware individuals showed a higher level of agreement than message unaware individuals for one CAMI item ("People with mental illness have for too long been the subject of ridicule").

3.4. Association between awareness of the OBERTAMENT campaign and attitudes and intended behaviour.

Table 4 presents the results of the models comparing the attitudes and intended behaviour of campaign and message aware individuals vs unaware individuals.

Table 4

3.4.1. Campaign awareness

Campaign aware individuals had better attitudes based on the benevolence subscale of the CAMI than unaware individuals. Campaign aware individuals scored 0.82 points (0.14 points per item) higher than campaign unaware individuals on the benevolence subscale (p=0.001) before adjusting by the propensity score and of 0.61 (0.10 points per item) (p=0.009) after adjustment. Effect size of the difference was small (Cohen's d=0.11 and 0.08 before and after adjustment).

The campaign aware group had a higher RIBS score (mean item difference of 0.31 (p=0.001) and 0.23 (p=0.005) before and after adjustment by the propensity score, respectively). For the independent items, the highest difference was observed for continuing a relationship with a friend who developed a mental health problem with OR=2.01 and OR=1.64 before and after adjustment by the propensity score, respectively. What corresponds to small to small-medium effect sizes (Cohen's d=0.39 and 0.27, respectively). The lowest difference was observed for

living with someone with a mental health problem, with OR=1.62 and OR=1.38 before and after adjustment by the propensity score, respectively, corresponding to a small effect sizes (Cohen's d=0.27 and 0.18, respectively).

3.4.2. Message awareness

Before adjusting by the propensity score, the message aware group showed better attitudes in the authoritarianism and benevolence subscales of the CAMI than the message unaware group. Message aware individuals had an average item score 0.19 and 0.13 points higher than campaign unaware individuals in the authoritarianism and benevolence subscale, respectively ($p<0.05$). The effect size of the difference was small (Cohen's d=0.07). After adjusting by the propensity score, statistically significant differences were lost in both subscales.
Statistically significant differences between the message aware and unaware individuals were observed for the total RIBS score only before adjustment by the propensity score.

4. Discussion

This study evaluated the first burst of the OBERTAMENT social media mental health awareness campaign. The campaign reached one in five Catalans and campaign aware individuals showed small but significantly higher intended behaviour and benevolence attitudes toward people with mental illness compared with campaign unaware individuals.

The recall (spontaneous and/or prompted) of the See Me anti-stigma campaign was 36% two months after the launch of the first burst of the campaign and 48% after the launch of the third general public campaign [32]. Another mass media anti-stigma campaign, In one Voice, showed a market penetration of 24.8% two months after the beginning of the campaign [33].The penetration of the first burst of the OBERTAMENT campaign was similar to the penetration of the In one Voice campaign but smaller than that of the See Me campaign. This could be partly explained by the limited budget of the OBERTAMENT campaign (140,000€ for the first year). Burst expenditure of Time to Change was associated with campaign awareness in the campaign

target population [12]. For a population similar to Catalonia, the Scottish *See Me* campaign had a total budget of £617,000 for the first 3 years of the campaign [32].

Campaign aware individuals had better attitudes and intended behaviour associated with small effect size for attitudes and small-medium effect size for intended behaviour. This is in line with previous results of mass-media interventions for reducing stigma in mental health [16]. The study used a cross-sectional design and it is possible that people with better baseline attitudes and intended behaviour were more prone to notice and remember the campaign. However, the association between better attitudes and higher willingness to interact with people with mental illness was significant after adjusting by the propensity score. Although the intervention had a small-moderate impact, it is expected that this impact will mediate further improvements in the population. Improvements in social norms are expected to positively impact on intended behaviour change [34]. Furthermore, the mass-media campaign is accompanied by other non-mass media interventions such as a protest strategy and educational and contact interventions directed to students, journalists and the general population. We expect that the effects of these local interventions and the effects of the mass-media campaign will have an accumulative effect. It will be necessary to evaluate the evolution of the Catalan population beliefs and intended behaviour to elucidate the long-term effect of the campaign.

The impact on attitudes was observed only for the benevolence subscale. This is consistent with the message of the campaign, which tried to normalize mental illness and promoted supportive attitudes towards people with mental illness. The campaign did not address other mental health stigmatizing attitudes such as dangerousness, disability and incompetence or rehabilitation that are better characterised by the other CAMI subscales. Message awareness was not significantly associated with improved attitudes or willingness to interact with people with mental illness after adjusting by the propensity score. The prevalence of being message aware was small and the results showed a trend towards a significantly better attitudes and intended behaviour

(p=0.056) in message aware individuals which suggests that power may have limited the capacity to detect differences between groups.

5.1. Strengths and limitations of the study

To the best of our knowledge, this is the first study to evaluate the impact of a mass-media campaign to reduce stigma in the general population conducted in a non-Anglo-Saxon country. The study was conducted among a large representative sample of the Catalan population and included measures on exposition, attitudes and intended behaviour which allowed a comprehensive evaluation of the impact of the campaign that can inform future campaigns in Spain and other European countries.

Because of the complexity of conducting a randomized controlled trial with a mass-media intervention addressed to general population, we conducted a study without experimental control of individuals' exposition. Furthermore, the activation of the campaign was quick and made it impossible to carry out a before-and-after comparison. However, the sample was representative of the Catalan population and a propensity score was used to correct the biases introduced by the lack of randomization.

The CAMI scale showed only adequate validity and reliability in the sample and some bias could have been introduced by this measure. However, the CAMI is the most extensively used assessment tool for attitudes toward people with mental illness.

There is a possibility that social desirability bias exist when measuring attitudes and intended behaviour. Furthermore, we cannot be sure that improvements in intended behaviour will reduce discrimination. Previous studies that reported improvements in intended behaviour did not demonstrate improvements in actual behaviour [35].The survey included a measure of experiences of discrimination that has not been presented in this paper because it cannot be

directly related with the exposition of the individual to the campaign. We will evaluate the evolution of this outcome in the long term to evaluate if the campaign reduced discrimination.

In conclusion, the results of the study showed that mass-media campaigns are associated with a modestly positive impact on attitudes and intended behaviour in relation to mental illness in Spain. The present campaign was associated with more positive intended behaviour although the impact on stigma was limited to attitudes related to benevolence. Future campaigns may require a wider range of anti-stigma messages which could produce a stronger impact on intended behaviour. Long-term follow up of the evolution of the levels of stigma, intended behaviour and actual discrimination of the population is necessary to have a deeper understanding of the impact of the OBERTAMENT campaign.

Acknowledgements

The OBERTAMENT campaign was supported by the "Obra Social 'La Caixa'". Juan V. Luciano has a “Miguel Servet” research contract from the Institute of Health Carlos III (CP14/00087; Madrid, Spain). The research was supported by the Catalan Health Survey (Enquesta de Salut de Catalunya ESCA) of the Department of Health of the Government of Catalonia.

The OBERTAMENT campaign is grateful to the "Generalitat de Catalunya", "Obra Social 'La Caixa'", the Department of Health of the Government of Catalunya, the Department of Social Welfare and Family of the Government of Catalonia and the "Diputació de Barcelona" for their support to the campaign.

This research was supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care South London at King’s College London Foundation Trust. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health. GT is supported by the European Union Seventh Framework Programme (FP7/2007-2013) Emerald project. This paper is an output of the PRogramme for Improving Mental health carE (PRIME). The material has been funded by UK aid from the UK Government, however the views expressed do not necessarily reflect the UK Government’s official policies. The research supported by the National Institute for Health Research (NIHR) Collaboration for Leadership in Applied Health Research and Care South London at King’s College London Foundation Trust. The views expressed are those of the author(s) and not necessarily those of the NHS, the NIHR or the Department of Health. The authors acknowledge financial support from the Department of Health via the National Institute for Health Research (NIHR) Biomedical Research Centre and Dementia Unit awarded to South London and Maudsley NHS Foundation Trust in partnership with King’s College London and King’s College Hospital NHS Foundation Trust.

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Table 1. Sample characteristics and differences between aware and unaware groups before and after adjustment by propensity score

	Total		**Unexposed**		**Exposed**		**p-value**	
	n=1,019		**n= 829**		**n= 190**			
	%*	**95% CI**	**%***	**95% CI**	**%***	**95% CI**	**Unadjusted**	**Adjusted by PS**
Gender								
Male	48.76	45.42; 52.10	48.68	44.95; 52.43	49.10	41.79; 56.45	0.921	0.998
Mean age	48.04	46.78; 49.30	47.5	46.15; 48.91	50.11	47.32; 52.90	0.103	0.969
Marital status								
Single	29.89	26.83; 32.95	30.07	26.75; 33.61	29.20	22.95; 36.36	0.747	0.681
Married	55.62	52.30; 58.94	55.57	51.82; 59.26	55.82	48.42; 62.97		
Widow	7.03	5.38; 8.68	7.44	5.73; 9.60	5.45	3.11; 9.39		
Separated	3.05	1.87; 4.22	2.58	1.61; 4.11	4.87	2.44; 9.48		
Divorced	4.41	3.01; 5.81	4.35	3.02; 6.22	4.66	2.39; 8.89		
Nationality								
Spanish	86.59	84.31; 88.87	85.31	82.45; 87.78	91.59	86.49; 94.87	0.029	0.964

Spanish and foreign	2.14	1.14; 3.14	2.25	1.34; 3.74	1.71	0.54; 5.32		
Foreign	11.27	9.16; 13.37	12.44	10.18; 15.12	6.70	3.85; 11.41		
Education								
Primary or no studies	22.76	19.98; 25.54	22.96	19.97; 26.26	21.95	16.61; 28.41	0.349	0.497
Secondary	57.45	54.14; 60.76	56.02	52.26; 59.71	63.04	55.71; 69.81		
University	19.69	16.97; 22.41	20.89	17.95; 24.17	15.01	10.34; 21.29		
NS/NC	1.03	-0.10; 0.31	0.13	0.02; 0.92	0.00	-		
Working status								
Employment	46.23	42.89; 49.57	46.35	42.63; 50.11	45.76	38.53; 53.17	0.937	0.540
Unemployed	11.99	9.79; 14.19	12.72	10.40; 15.47	9.14	5.68; 14.37		
Retired	15.24	12.91; 17.57	13.84	11.53; 16.53	20.70	15.40; 27.24		
Other	26.54	23.59; 29.49	27.09	23.89; 30.55	24.40	18.65; 31.24		
Has or has had a mental disorder								
Depression and/or anxiety	16.83	14.32; 19.33	14.48	12.02; 17.35	25.99	20.10; 32.90	0.001	0.929
Other mental disorder	1.00	0.33; 1.67	1.09	0.53; 2.21	0.66	0.09; 4.54	0.636	0.978

Has taken medication in the last two days								
Sedatives or tranquilizers	8.54	6.67; 10.41	8.05	6.23; 10.35	10.44	6.72; 15.86	0.312	0.950
Antidepressants	8.40	6.52; 10.29	7.92	6.07; 10.25	10.31	6.64; 15.67	0.306	0.949
Sleep medicines	8.50	6.67; 10.34	7.82	6.05; 10.06	11.17	7.38; 16.56	0.148	0.914
Contact with people that has or has had a mental disorder								
Anyone	46.97	43.63; 50.31	43.21	39.53; 46.96	61.66	54.22; 68.58	0.001	0.992
Close relative	18.74	16.12; 21.37	18.52	15.75; 21.65	19.59	14.45; 26.02	0.743	0.989
Other relative	14.21	11.84; 16.59	13.96	11.51; 16.84	15.19	10.64; 21.23	0.676	0.916
Friend	17.90	15.34; 20.46	16.05	13.47; 19.01	25.12	19.32; 31.98	0.005	0.916
Other	17.78	15.26; 20.31	16.30	13.73; 19.25	23.58	18.05; 30.19	0.022	0.943

* With exception of age (mean). PS=Propensity score

Table 2. Penetration of the campaign

	Proportion (%)	95% CI
Recollection of a campaign related to mental health		
Yes	10.80	8.92;13.03
No	89.20	86.97;91.08
He/she remembers a campaign...		
but not the content	2.26	1.44;3.52
related to mental health but not related to discrimination or stigma against people with mental health problems	2.73	1.84;4.05
related to discrimination or stigma against people with mental illness	0.80	0.37;1.72
not related to mental health	2.69	1.80;3.99
NC	2.33	1.56;3.48
Recognition of the campaign OBERTAMENT		
Yes	20.38	17.83;23.20
No	79.62	76.80;82.17
Remembers any message related to the campaign		
Yes	7.27	5.72;9.21
No	92.73	90.79;94.28
Message		
Related to prejudices, stereotypes, discrimination, etc against people with mental health problems ("What takes us away is not the mental illness but the prejudices")	4.89	3.63;6.56
People with mental health problems need the affection of their network of friends and family, just like anyone	1.00	0.53;1.90
The mental health problems are normal and part of daily life	1.12	0.59;2.10

("One person in four will experience some form of mental health disorder at least once in their lives")		
A mental disorder is only a part of the person's life, it does not defines his/her essence ("I am still the same")	0.26	0.06;1.03
Not related to stigma or discrimination	2.92	1.96;4.33
NC	10.19	8.36;12.37
Media		
Public transport	1.40	0.77;2.53
Diaries or written press	0.61	0.26;1.42
Television	13.42	11.33;15.81
Internet	2.37	1.52;3.68
Street advertisement	0.51	0.19;1.36
Primary health care/Hospital	1.50	0.86;2.60

NC = no comment.

Table 3. Proportion (%) of people that agree or strongly agree to the CAMI and RIBS items by campaign and message awareness subgroups.[&]

	Campaign awareness				**Message awareness**			
	Unaware n = 829	95% CI	Aware n = 190	95% CI	Unaware n = 952	95% CI	Aware n = 67	95% CI
Attitudes-Authoritarianism								
1. One of the main causes of mental illness is a lack of self-discipline and will-power[&]	48.95	45.06; 52.84	44.32	36.70; 51.95	47.63	44.03; 51.23	52.83	40.15; 65.50
2. There is something about people with mental illness that makes it easy to tell them from normal people[&]	37.33	33.62; 41.05	34.75	27.60; 41.91	36.52	33.10; 39.94	40.50	27.86; 52.14
3. As soon as a person shows signs of mental disturbance, he should be hospitalized[&]	52.97**	49.15; 56.79	45.89**	38.44; 53.34	50.39	46.86; 53.93	66.02	54.12; 77.92
4. Mental hospitals are an outdated means of treating people with mental illness	23.63	19.85; 27.42	22.14	15.24; 29.04	23.47	19.98; 26.96	21.57	10.08; 33.08
5. People with mental illness are a burden on society[&]	71.02	67.63; 74.42	75.20	68.69; 81.71	71.45	68.32; 74.58	77.25	66.30; 88.21

6. People with mental illness should not be given any responsibility[&]	49.67	45.80; 53.53	47.29	39.73; 54.86	48.41	44.83; 51.98	59.10	46.62; 71.58
7. Anyone with a history of mental problems should be excluded from taking public office[&]	68.23	64.69; 71.76	74.02	67.48; 80.55	68.60	65.34; 71.86	79.74	69.59; 89.90
Attitudes-Benevolence								
8. Virtually anyone can become mentally ill	90.74	88.56; 92.92	92. 62	88.72; 96.51	90.98	88.98; 92.98	93.03	86.74; 99.32
9. People with mental illness have for too long been the subject of ridicule	69.34***	65.81; 72.87	83.54***	77.88; 89.20	71.11*	67.90; 74.33	86.51*	77.83; 95.20
10. We need to adopt a far more tolerant attitude toward people with mental illness in our society	89.17	86.73; 91.61	93.45	89.45; 97.42	89.64	87.42; 91.87	95.11	89.42; 100.81
11. We have a responsibility to provide the best possible care for people with mental illness	92.67	90.63; 94.69	92.65	88.69; 96.61	92.41	90.50; 94.32	95.89	90.99; 100.79
12. People with mental illness don't deserve	94.59	92.86; 96.31	98.03	95.98; 100.00	95.04	93.52; 96.57	98.41	95.24; 101.58

our sympathy[&]								
13. Increased spending on mental health services is a waste of money[&]	92.83*	90.85; 94.81	95.31*	92.22; 98.40	93.12	91.33; 94.92	96.08	91.30; 100. 86
Attitudes-Support for community mental health care								
14. Less emphasis should be placed on protecting the public from people with mental illness	32.91	29.26; 36.57	37.03	29.76; 44. 29	33.43	30.04; 36.82	37.81	25.47; 50.14
15. I would not want to live next door to someone who has been mentally ill[&]	65.97	62.34; 69.60	75.72	69.11; 82.33	67.15	63.81; 70.49	78.21	67.37; 89.05
16. No-one has the right to exclude people with mental illness from their neighbourhood	80.20	77.18; 83.22	80.18	74.24; 86.12	80.01	77.21; 82.82	82.44	72.97; 91.91
17. People with mental illness are far less of a danger than most people suppose	58.24	54.39; 62.09	63.81	56.44; 71.19	59.05	55.49; 62.61	63.57	51.17; 75.97
18. Most people who were once patients in	40.22	36.36; 44.08	38.34	30.84; 45.85	39.51	35.94; 43.08	43.97	31.06; 56.88

a mental hospital can be trusted to take care of other (babysitters, etc.)								
19. The best therapy for many people with mental illness is to be part of a normal community	80.18	77.04; 83.31	89.13	84.22; 94.05	81.71	78.89; 84.53	85.74	76.59; 94.88
20. As far as possible, mental health services should be provided through community based facilities	72.40	68.89; 75.91	67.20	60.03; 75.91	71.05	67.75; 74.34	75.01	64.07; 85.94
21. Residents have nothing to fear from people coming into their neighbourhood to obtain mental health services	68.93	65.28; 72.57	73.83	66.99; 80.67	69.51	66.14; 72.88	75.22	63.81; 86.63
22. It is frightening to think of people with mental problems living in residential neighbourhoods[&]	73.01	69.58; 76.43	80.22	74.16; 86.28	74.31	71.19; 77.44	76.58	65.69; 87.46
23. Locating mental health facilities in a residential area downgrades the	81.47	78.43; 84.51	78.67	72.32; 85.01	81.28	78.45; 84.11	75.99	65.03; 86.96

neighbourhood[&]								
Intended behaviour								
1. In the future, I would be willing to live with someone with a mental health problem	56.11*	52.30; 59.92	67.85*	60.78; 74.92	57.35	53.84; 60.87	73.14	61.85; 84.42
2. In the future, I would be willing to work with someone with a mental health problem	66.58*	62.95; 70.21	80.29*	74.20; 86.37	68.05	64.73; 71.37	86.22	77.07; 95.36
3. In the future, I would be willing to live nearby to someone with a mental health problem	69.02*	65.47; 72.57	81.68*	75.79; 87.58	70.63	67.39; 73.86	84.05	74.55; 93.56
4. In the future, I would be willing to continue a relationship with a friend who developed a mental health problem	73.59**	70.19; 76.99	85.23**	79.70; 90.76	74.91	71.81; 78.01	89.31	81.21; 97.43

[&]Scores of negative items were reverse coded so that those who agree or strongly agree show more favourable attitudes. *p<0.05 **p<0.01 ***p<0.001: differences between aware and unaware individuals in ordered logistic regression models adjusted by propensity score.

Table 4. Mean total score (and mean item*) difference between campaign and message awareness in stigma related attitudes and intended behaviour

	Campaign awareness				**Message awareness**			
	Unadjusted difference between groups	p-value	PS adjusted difference between groups	p-value	Unadjusted difference between groups	p-value	PS adjusted difference between groups	p-value
Attitudes								
Authoritarianism	-0.30 (-0.04)	0.437	-0.65 (-0.09)	0.102	1.32 (0.19)	0.022	0.64 (0.09)	0.256
Benevolence	0.82 (0.14)	0.001	0.61 (0.10)	0.010	0.76 (0.13)	0.032	0.55 (0.09)	0.130
Support for community mental health care	0.54 (0.05)	0.257	0.15 (0.02)	0.754	0.94 (0.09)	0.194	0.36 (0.04)	0.623
Intended behaviour								
Total score	1.22 (0.31)	0.001	0.93 (0.23)	0.005	1.38 (0.35)	0.003	0.91 (0.23)	0.056

*Mean item difference was calculated as total score divided by the number of items in the scale (4 for RIBS, 7 for CAMI-Authoritarianism, 6 for CAMI-Benevolence and 10 for CAMI-Support for community mental health care).

PS=Propensity score; MHP=Mental health problem

Appendix A. Information about the OBERTAMENT mass media campaign

The main objective of the campaign was both publicizing the problem of stigma and discrimination faced by people with mental illness and how they are socially affected by stigma and discrimination. "What moves us away is not the disorder but the prejudice" was the key message of this first advertisement which denounced the social isolation experienced by people diagnosed with a mental disorder. The messages of the campaign were prepared by the OBERTAMENT Board (including members of patient associations, families associations and mental healthcare professionals) and the communication agency in charge of advertising. This message was adapted to three media channels (TV, radio and billboards) and three versions with different diagnosis and ages of the billboards were made. The campaign was endorsed by Catalan celebrities.

The campaign OBERTAMENT was supported by the Departments of Health and Family Welfare of the Government of Catalonia, the Barcelona Provincial Council, the City council of Barcelona and the Obra Social "La Caixa". Free advertisement spaces were granted. The total budget of the campaign was 140,000 euros.

Forty-two television broadcasts were shown on Catalan and regional public channels (Televisió de Catalunya-TV3, Barcelona Televisió-BTV and Xarxa de Televisions Locals de Catalunya-la xarxa) and an interview of three OBERTAMENT spokespeople in a television talk show in the Catalan Public Television (Els matins de TV3) was broadcasted. The TV advertisement was also shown (1,064 broadcasts) in the Barcelona subway. Four Catalan newspapers included a total of 13 print ads (El Periódico[7], La Vanguardia[3], El Punt-Avui[2] and DiariAra[1]). Seven reports and interviews to OBERTAMENT spokespeople were published in these and other Catalan newspapers. On Catalunya Radio and other Catalan and Spanish radios, 26 advertisements and four interviews with OBERTAMENT spokespeople were broadcasted. Billboards were placed in the Barcelona subway (100), the

city of Barcelona (500) and other cities all over Catalonia (4,000). The campaign was also present in digital media in at least 16 different websites (*La Xarxa, Ara.cat, Xarxanet.org, Digital-h*, etc).

Appendix B. Psychometric evaluation of the Community Attitudes Towards the Mentally Ill-26 items version (CAMI-26)

The CAMI was translated and back translated into Spanish and Catalan languages and adapted cross-culturally by the research team. Scores of negative items were reverse coded so that higher scores indicate more favourable attitudes.

We evaluated the psychometric properties of the Spanish version of the CAMI employing SPSS v22.0. We made use of CAMI-26 scores for a principal component analysis (PCA). Following the common assumption that the ratio of participants per item is crucial for factor analysis, we were able to satisfy the minimum of 5 individuals-per-item ratio [1]. To know the suitability of the CAMI data for factor analysis, the Kaiser-Mayer-Olkin's (KMO) [2] Measure of Sampling Adequacy was computed. KMO scores above 0.70 are considered adequate. The Bartlett's test of Sphericity [3] was also computed to examine the extent to which the correlation matrices departed from orthogonality. In order to make our results in this exploratory analysis comparable with those originally reported by Taylor and Dear (1981) [4], an orthogonal (varimax) rotation was used to explore the underlying structure of the scale. The following set of rules helped to determine the optimal number of components to retain [5]: Kaiser's criterion (components with eigenvalues > 1.0), the Cattell's scree test (inspection of a plot of the eigenvalues for breaks or discontinuities), and item loadings (an item forms part of a component if its factor loading on that factor is ≥ 0.32).

The KMO measure yielded a coefficient of 0.843, which is indicative of satisfactory sampling adequacy. The Bartlett's test of sphericity produced a figure of 2,975.43 ($P < 0.0001$), indicating that the correlation matrix was suitable for factor analysis. The PCA (n= 551 after listwise deletion) revealed 8 factors with eigenvalues > 1.0. The first component explained 20.8% of the variance whereas the other 7 components explained 7.3%, 5.9%, 5.1%, 4.7%, 4.3%, 4.2%, and 3.9% of the variance respectively (eigenvalues of the 8 components were 5.41, 1.90, 1.55, 1.33, 1.22, 1.12, 1.08, and 1.02, respectively). Taking into account that the criterion of eigenvalues greater than 1.0 can lead to overestimating the number of meaningful components, we decided to examine the scree plot and the pattern of

factor loadings, which suggested that 3 components may be sufficient to capture the essence of the Spanish CAMI-26. A second PCA was performed, specifying that only 3 components should be identified. The second PCA yielded a 3-factor solution (accounting for 34% of total variance), with 23 items loading strongly on their respective factor ($\lambda \geq 0.32$). Three items (items 4, 6, and 14) did not meet this rule-of-thumb. In addition, item 16 was discarded from the final solution as it cross-loaded in two factors ($\lambda = 0.42$ in factors 1 and 3). Given that it might be very strict the exclusion of item 6 ($\lambda = 0.31$), we decided to retain the 3 CAMI domains and 23 items (exclusion of items 4, 14, and 16) for further analyses. To sum up, the 3-factor structure of the Spanish CAMI had an "authoritarianism" factor (items 1, 2, 3, 6, 12, 15, and 18), a "benevolence" factor (items 7, 8, 9, 10, 11, 13) and a "support for community mental health care" factor (items 5, 17, 19, 20, 21, 22, 23, 24, 25, and 26) that supposes the fusion of the original factors social restrictiveness and community mental health ideology. Factor loadings for the 3-factor model are presented in Table S1. Cronbach's α coefficients were computed for each CAMI subscale. Overall, the reliability of the CAMI subscales was between questionable and acceptable (authoritarianism=0.54; benevolence=0.63; support for community mental health care=0.72). Although there are great divergences between experts, a Cronbach's a value between 0.35 and 0.70 represents fair but acceptable reliability. Another common rule of thumb criterion is a Cronbach α of 0.60 for exploratory research and of 0.70 for confirmatory research [6].